

*Interdisciplinary Team*

Name	Position	Office	Area of Responsibility
Allen Madril	Archaeologist	Supervisor's Office	Heritage resources
Brad Higginson	Hydrologist	Supervisor's Office	Watershed analysis
Bryan Armel	Forest Planner	Supervisor's Office	Mapping, computer data analysis
Dennis Eckardt	Forester	Supervisor's Office	Timber
Clint Dawson	Fire Management Officer	North zone <sup>22</sup>	Fire and fuels analysis
Karin Lancaster	Engineer	Supervisor's Office	Transportation system
Ray Zubik	Fisheries Biologist	Supervisor's Office	Fisheries
Myrna Ulmer	Forester	Supervisor's Office	Mapping, computer data analysis
Kent Houston	Soil Scientist	Supervisor's Office	Soil resources, botany, weeds
Marty Sharp	NEPA Coordinator	North zone	Team Leader, NEPA compliance
Mary Ritz	Rangeland Management Specialist	North zone	Range resources
Monte Barker	Wildlife Biologist	North zone	Wildlife analysis
Thad Harper	Recreation Planner	North zone	Recreation
Vaughn Hintze	Landscape Architect	Supervisor's Office	Visuals

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<sup>22</sup> The Clarks Fork, Greybull, and Wapiti Ranger Districts comprise the north zone of the Shoshone National Forest. The district office is located in Cody, Wyoming.

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## Appendix A - Public Involvement

These individuals, groups, private landowners, businesses, Native American Tribes, and government agencies were mailed the January 27, 2003 scoping letter. Shading indicates a response to scoping.

Louis Kousoulos	Ken Jeziorski	James Ellison	Grady and Nada Ivy
Don Kalas	Tom Lealos	Robert Frisby	Joe and Sandy Koenig
Maryanne Schultz	Dan and Tana Shively	George Gould	Raymond Lavigne
Richard Hammarlund	Gene Bryan	Richard Anderson	Donna Mann
Ward Akins	Mark Skoric	Berryman	Lee and Winnie McClung
Nick Patrick	Lynne Chadwick	Dr. John Bluhner	Bror Nordenstam
Charlie and Joan Wright	Gerald Jech	Anthony Cianflone	Jim W Pyle Trust
Pearre Williams	Don Bentzen	Duberstein and Walker	Arnold Siirila
Hub and Joyce Hart	Bernie Spanogle	Greater Yellowstone Coalition	Dennis Carmon
Joe and Connie Vessels	Rick and Vicki Flesher	Jay Mennenger	Cecil Alice Johnson
Robert and Gloria Beaver	Robert and Angela Coe	Susie Tromble	Ted and Diane Kylander
Ray and Betty Karlin	Jeff Capron	Vicki Olson	John Learned
Lamar Empey	Carole Cloudwalker	Kristin Fields	Jack and Darlene Manning
Jim McNiece	Hans Johnson	Bill Bratton	Allan McCorkle
Terry Hinkle	Werner Noesner	Wyoming Outdoor Council	Joanne Odasz
Mike Hanson	Ham Bryan	Rob Ament, American Wildlands	Shirley Scheuch
Skip Largent	Bob Acker	Alliance for Wild Rockies	Victoria Smiley
Van Largent	A Becker	Chuck and Penny Preston	John and Ann Way
Vivian Stokes	Peter and Diane Wolfe	WY Office of Federal Lands Policy	Gene Wilkerson
Tom Blair	S George	State Historic Preservation Office	Suzanne Wright
Bob Model	C. Wawak	State Lands and Investments	Sandra Whalen
Mike Catterton	Russ Linneman	WY Game & Fish Dept	Karen Johnson
M E Ballinger	Kelly Matheson	Cody Enterprise	Jesse Winzenried
Craig Chase	Yellowstone National Park	DEQ/Dennis Hemmer	Anne Neale Young
Joyce Cicco	Park County Commissioners	Big Horn Radio Network	Ed and Deborah Whitmer
Karen McCreery	Tim Wade	WY Game and Fish Dept, T. Collins	Lucy Holder
Marie and Bob Fontaine	Pam Buline	WY Game and Fish Dept., Regional	Rondal Wendling
Robert Snyder	Duane Whitmer	Director	Jerry Housel
Bob Richard	Tracy Sweet	Laurie Stone	Northern Arapahoe Business Council
Charles Kirkham	Tracy Copenhauer	M. Long-US Fish and Wildlife	Abraham Spotted Elk Sr.
Jerry Altamatt	Erwin Evert	BLM Mike Blymyer	John Hill
Craig Sax	Shelia Rae Asher	USFW-Terry Root	Alan Slickpoo
Vieune Revolinski	Ann Becker	Cody Lumber	Diana Yupe
Ray Hall	J D Bonner	Powell Tribune	Del Clair
Rick Brasher	Kim Clark	Gary Hoar, Trout Unlimited	Ivan Posey
Harvard Logging	Charles and Ann Crowell	Carrie Gasch	Shoshone Tribal Council
Mel Faber	William and Valerie Dunn	Knut and Gail Gjovik	Raymond Usesknife
Chuck Hansen	Clarence and Janet Frey	John Huey	Joe Walksalong
Charlie Johnstone	First National Bank	Tom and Debra Lauhery	Northern Cheyenne Cultural
John McGee	Jerrene Allen	Cornelia Keller	Committee
John Parsons	Dennis Allquist	Rebecca Lewis	Burton Pretty on Top Sr.
Jessie Farias	Beverly Moore Bennett	Carroll and Diana McCloud	Nez Perce Tribal Council
Pete and Karen Jachowski	Pamela Betters	John and Kathy McFadden	Shoshone-Bannock Tribal Council
Jerry Kenney	Chadwick Trust	Jacque and Rodney Payne	Haman Wise
Bob Capron	William and Virginia Corbett	James Strite	Bronco Lebeau
Daniel Hinz	Shannon Danley		Bill Timentwa

Shoshone Business  
Council  
Floyd Youngman  
Mark Wandering Medicine  
Northern Cheyenne Tribal  
Council  
Crow Tribal Council  
Charlie Moses Jr.  
John Washakie  
Wes Martel  
Bud McAdams  
Greg Bourland  
Jeff Van Pelt  
Darrell Youpee  
Harold Salway  
Joe Williams  
Betsy Chapoose  
Michael Graham  
Dallas Ross  
Clifford Duncan  
Jerry Flute  
Ron Wopsock  
Norman G Wilson  
Al Burken  
Tonia Grainia  
Bill Nielson  
Sierra Club Chapter  
Michael Scott  
Marcia Rothwell  
Chuck Neal  
Biodiversity Conservation  
Alliance  
People for Wyoming  
Mooncrest Ranch  
Robert Hanson  
R. Moorman/Earth Justice  
Dick Scott  
Charles Cord  
Univ. of Wyoming  
Absaroka Lodge  
Elephant Head lodge  
Sweetwater Lodge  
Blackwater Lodge  
Rimrock Dude Ranch  
Trail Shop  
Crossed Sabres Ranch  
Bill Cody Ranch  
Shoshone Lodge  
Goff Creek Lodge

### ***Appendix B – Scoping Comment Summary***

Within this appendix is a summary of the scoping comments that received and considered in the development of the North Fork Vegetation Management EA. Comments are identified by commentor. The comments are paraphrased; the intent is to capture the main intent of the comment. Comments that were used in describing a particular issue are noted in the issue column. The type column is used to help us sort the comments. The disposition column briefly indicates how the comment is addressed in the analysis or why it was not addressed (i.e. outside the scope of the analysis). How a comment is categorized is not important; the focus is ensuring that the comment is addressed.

***Table 1. Type Code Descriptions***

<b>Type code</b>	<b>Type</b>	<b>Description</b>
ALT	Alternative Development	Comments that could provide an alternative to the proposed action.
C	Concerns	These comments will be responded to by discussion in the comment disposition, project file, the EA, or in an appendix to the EA.
GS	General Statement	Comments expressing a statement and do not require a response.
OS	Outside Scope	Comments where a decision has already been made or is beyond the scope of the proposed action.
R	Request	Comment requests information or clarification. Does not necessarily indicate an issue or concern. Items requesting specific activities are coded with RA.
RD	Recommend Decision	These comments express a preference for a final decision, or an aspect of the decision. They will not generally be responded to in the analysis, but will be considered by the decision maker. These tend to be more general in nature than those items under RA.
RA	Recommend Other	These comments make recommendation related to specific proposed actions other than the decision.

***Table 2. North Fork Vegetation Management EA Scoping Comment Summary***

<b>Source</b>	<b>#</b>	<b>Comment (paraphrased)</b>	<b>Issue</b>	<b>Type</b>	<b>Disposition</b>
Biodiversity Conservation Alliance (BCA)	1	We conditionally support the proposed action of implementation of controlled burns, the reduction of hazardous fuels within ½ mile of development, and the creation of limited fuel breaks.	Wildfire	GS	
BCA	2	We applaud the FS units proposal to use fire to achieve many of the goals of this project. We are also very pleased to see that the FS will limit treatment to within ½ mile of developments, thus creating a truly defensible space. However, we do not support the use of mechanical thinning, we also oppose the utilization of timber contracts for salvage and sanitation logging and have other environmental concerns with salvage logging.	Wildfire	ALT.	The alternative to have prescribed fire only was an alternative considered but eliminated from detailed study, See section 2.1

Source	#	Comment (paraphrased)	Issue	Type	Disposition
BCA	3	Concerns over possible impacts to sensitive species, including Yellowstone cutthroat trout and native fisheries, spawning gravel, woodpeckers, cavity nesting birds, habitat for big game and threatened and endangered species. Also, the project's possible impact to sensitive species and management indicator species, including wildlife disturbance and stress, hiding and thermal cover, canopy cover, forage, habitat effectiveness, security areas, habitat connectivity, critical winter range, migration routes, birthing areas, raptor nests and roosts, snags and down woody material were all raised as concerns.	Wildlife	C	See EA, Section 3.1.5 for Sensitive Plants and 3.1.6 for Noxious Weeds and 3.2 for Wildlife
BCA	4	What effects would the proposed action have on microclimates, forest conditions and diversity, species diversity, forest cover removal, old growth and interior forest, age classes, native plants and weeds, aspen and deciduous species, epidemic insect and disease outbreaks, fire regimes, stand succession, natural processes and ecological conditions?	Vegetation	C	See EA, Section 3.1 Vegetation and 3.4 Fire and Fuels
BCA	5	Potential effects to potential wilderness, roadless areas, or archeological sites in the project area.	Roadless	C	See EA, Section 3.6 Recreation and 3.8 Heritage Resources
BCA	6	Impacts to wetlands, seeps, bogs and fens (including impacts to upland areas that may alter recharge/hydrology of down-slope wet areas, loss of shading in riparian areas, stream banks, and ponds	Soil and Water	C	See EA, Section 3.3 Watershed Resources (Soil and Water)
BCA	7	Possible impacts associated with an increase of pollution due to carbon and sulfur emissions, other harmful chemical emissions, and chemical spills from leaking fuel, radiator, or oil tanks were raised.	Soil and Water	C	See EA, Section 3.3 Watershed Resources (Soil and Water)
BCA	8	Changes in water quality associated with increased sedimentation due to increased motorized use in the area. Other Changes in water quality, water quantity, stream flow rates, stream channels, stream temperatures, and increased access for fishing.	Soil and Water	C	See EA, Section 3.3 Watershed Resources (Soil and Water)
BCA	9	All impacts to natural processes like soil nutrient recycling and stand succession and other natural processes dependent upon fire and insect and plant parasites.	Soil and Water	C	See EA, Section 3.3 Watershed Resources (Soil and Water)
BCA	10	Impacts to the area's natural beauty, visual quality and the loss of quiet, backcountry, non-motorized recreational opportunities.	Recreation	C	See Ea, Section 3.6 Recreation and 3.7 Visuals.
BCA	11	The need for management of roads and human use: user-created roads, increased access for OHV use, wildlife harassment, fishing pressure, poaching, litter, off-highway vehicle damage to riparian areas	Wildlife and Recreation	OS	



Source	#	Comment (paraphrased)	Issue	Type	Disposition
BCA	12	No Mechanical Treatments -Treatment with prescribed burning only Alternative.  No Road Incorporation Alternative.  Limited Fuel Break Alternative.	Wildfire and Roads	ALT.	<b>No Mechanical Treatments.</b> Treatment with prescribed burning only. Prescribed burning on all acres was dismissed, as it would not be feasible to safely burn extensive forested areas with large amounts of continuous hazardous fuels without first implementing mechanical treatments to reduce fuels and break up fuel continuity. Burning would set successional stages back to a grass/forb stage on a large area and would not move the forest vegetation toward the desired condition. It does not meet Forest Plan direction, goals, and objectives for vegetation diversity, hiding and thermal cover, etc. <b>No Road Incorporation Alternative.</b> Biodiversity Conservation Alliance request a No New Road Addition alternative that would not increase motorized opportunities, since an increase in motorized opportunities would result in an increase in fire risk. A separate alternative is not needed in addition to the action alternatives as no new roads are proposed that would be left open for motorized use. All roads would be temporary roads that would be decommissioned as part of the action alternatives. <b>Limited Fuel Break Alternative.</b> This alternative would state that fuel breaks be established no farther than 0.25 miles from property which is being protected. The action alternatives are designed to reduce fuels within the wildland-urban interface to a distance of ¼ to ½ mile depending on terrain and fuels. The distance needs to vary according to the site-specific conditions and in many cases a ¼ mile would be inadequate, especially considering spotting from a crown fire and the varying terrain and fuels. The one-size fits all approach of a ¼ mile limited fuel break would not meet all project objectives and was not analyzed in detail as an alternative.
Louisiana Pacific	1	We are in support of these fuels reduction projects in order to help prevent the events of catastrophic wildfires. Our forests today are in such poor shape due to the lack of management, drought, and infestations of insect and disease.	Wildfire, Fuels, Insects	GS	
Louisiana Pacific	2	We need these projects to put our forests back in a healthy state and put us in the proactive mode instead of the reactive or “survival” mode that we have been in.	Wildfire, Fuels, Insects	GS	
Louisiana Pacific	3	By salvaging beetle-killed trees, we can enhance wildlife habitat, reduce hazardous fuels, and provide for the local economy.	Wildfire, Fuels, Insects	GS	
Park County Commissioners	1	The Board agrees that the need for management of the resource can wait no longer. However, it would appear that the environmental analysis would only affect a very small portion of the North Fork corridor. We suggest that the three locations you have suggested as priority areas need to be expanded to incorporate the whole corridor as the projects are planned for implementation over at least five years (5) years.	Amount of Area Treated and Timeframe	R	The treatment areas and acres are discussed in sections 1.4 Purpose and Need, and section 2.2.2 Proposed Action.
Park County Commissioners	2	We agree with the proposed action(s) of fuel break creation, salvage of beetle-killed trees, hazardous fuel reduction and wildlife habitat enhancement and would like to see a comprehensive management action throughout the corridor and adjoining areas.	Wildfire, Fuels, Insects, Wildlife	GS	

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Park County Commissioners	3	We strongly agree with your stated purpose and need for the action, especially as the action relates to our economic and social concerns for the North Fork. We have expressed our concerns to the Forest Service about the need to protect the health, safety and welfare of our homes and businesses dependent on the continued use of the Forest. We look forward to your plan for actions to ensure their continued presence.	Economic and Social Concerns and Health and Safety.	GS	
Chadwick	1	Support thinning or harvesting timber in the area to reduce fuel loads and the risk of it burning	Wildfire, Fuels	GS	
Cody Lumber	1	The proposed actions are well intended and certainly needed. The magnitude of the forest health situation on the North Fork is past the point where these proposed projects can be effective. The public health and safety issues are much more within the effective realm of management actions. The cost-effectiveness of any proposed actions is also within the effective scope of Forest Service decision making. .	Wildfire, Insects, Health and Safety	GS	
Cody Lumber	2	The scoping statement lays out the situation pretty well. It's a serious problem needing serious and immediate attention. Cody Lumber is concerned with the limited scope of the proposals, and especially with the proposed five-year implementation. The proposals do not seem intended to treat as many acres as needed as quickly as needed. How many acres will receive treatment?	Amount of Areas Treated and Timeframes	GS/R	See 2.2.2 Proposed Action
Cody Lumber	3	The five-year implementation plan clearly does not reflect a serious recognition of the public health health and safety problems we are facing. This area should be treated within no more than one year.	Timeframes	GS	
Cody Lumber	4	The proposals do not reflect a sufficient concern or urgency to capture the value of the salvageable timber. Dragging this project out over five-years will produce an even poorer quality of merchantable material. This will make the marketability of this material even less. This should not be ignored or not considered in proposing projects.	Wildfire, Fuels, Economics	R	See Chapter 2 Alternatives.
Cody Lumber	6	Wildlife improvements projects should be prioritized to capture any associated salvage timber as quickly as possible. This does not appear to be reflected in these proposed projects.	Wildlife, Wildfire, Fuels	ALT	See Chapter 2 Alternatives.
Cody Lumber	7	The majority of the standing timber is already dead or seriously infected. The loss of volume from rot and defects would only decrease the value of any salvage to a point it would not be economically feasible. The loss of volume would result in increasing the fuel loading instead of mitigating the possibility of a catastrophic wildfire.	Economics Wildfire, Fuels,	GS	
Cody Lumber	8	While service contracts would help to mitigate the poor cost effectiveness of such projects, it would seem good business not to settle for the lowest common denominator in products offered too quickly or easily.	Economics	GS	

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Cody Lumber	9	Cody Lumber, Inc. would like to suggest that the Shoshone Forest propose projects that could be implemented quickly should categorical exclusions for fuels reduction become a viable and legal possibility. Wording to that end should be integrated into the final document.	NEPA Process	GS	
State Historical Preservation Office	1	Provided the USFS follows the procedures established in regulations, we have no objections to this project	Regulations	GS	
Wyoming Game and Fish	1	Expressed support for the project. Fuels and vegetation management along the North Fork would result in plant successional setbacks that would be beneficial for providing diverse wildlife habitat for a number of species.	Fuels, Wildlife, Riparian	GS	
Wyoming Game and Fish	2	The Department has categorized the Yellowstone cutthroat trout as Status 2 species. Status 2 species are populations that are physically isolated and/or exist at extremely low densities throughout their range, and habitat conditions appear to be stable.	Fisheries	GS	
Wyoming Game and Fish	3	The Department supports this fuel reduction project as a means to help control wildfires in the North Fork Corridor. Considering the fuel loads that are available in this area, any attempt to lessen the impact of such as a devastating event will have a positive benefit for the watershed.	Wildfires, Fuels, Watershed	GS	
Wyoming Game and Fish	4	The Department would encourage selective conifer thinning in the riparian zones to open up the canopy and provide for the enhancement of seral deciduous growth. The department requests the Forest Service to expand this project beyond those areas listed in the scoping documents to include all tributaries of the North fork Shoshone River where scientific evidence indicates as needed.	Riparian Zones, Deciduous Vegetation	R	See 3.1.1 Vegetative Diversity, 3.2 Wildlife, 3.3 Watershed, and 3.4 Fire and Fuels discussions.
Wyoming Game and Fish	5	The EA should address efforts that will be taken to protect water quality, riparian area and fisheries resources in the analysis area. Best management practices to control erosion should be followed for all proposed treatment areas, with special care taken along tributary streams that are treated. Many of these streams are extremely important for trout spawning.	Water quality, Riparian Areas, Fisheries	R	See 3.3 Watershed Resources discussion.
WY Office of State Lands	1	Any vegetative management activity which occurs in the corridor will, in the short term, be beneficial from a fire management standpoint, and we would encourage that projects move forward as quickly as the quality of salvage material decreases rapidly with the passing of time.	Wildfire, Economics	GS	
WY Office of State Lands	2	Activity is needed to mitigate fuels problems in the immediate vicinity of structures for the protection of firefighters and structures.	Fuels, Protection of firefighters and structures	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
WY Office of State Lands	3	We also support the reduction of fuels resulting from the insect infestation.	Fuels, Insects	GS	

Source	#	Comment (paraphrased)	Issue	Type	Disposition
WY Office of State lands	4	We would suggest that access issues such as “narrow, dead end roads and one-way in/out routes” be thoroughly examined. Potential solutions including construction of additional roads and removing vegetation to allow access by structure trucks should be considered during scoping and preparation of EAs for individual project proposals.	Ingress /Egress for fire suppression	R	See 3.4 Fire and Fuels discussion
Greater Yellowstone Coalition (GYC)	1	Management actions should be specific to the actual hazardous fuel threat for each vegetation type, as all are different in terms of fire return interval, response to fire, and types of fire that occur. Discuss the past wildfire history of the area and how the project will alter the wildfire occurrence in the area. Relate the discussion to habitat types. Please assure that treatments match the ecological characteristics of the forest type to be treated (fuels, fire return intervals, fire regime, effectiveness of harvesting in that forest type)	Wildfire, fire ecology, fire history, habitat types	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	2	We request that thinning activities concentrate on where past experience and research easy they will do the most good. Research shows that thinning to protect structures is most effective adjacent to the structure.	Thinning, structure protection	R	Treatments are designed to meet Forest Plan direction. See Chapter 2. Effects are disclosed in Chapter 3. See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion.
GYC	3	We request that activities focus on thinning understory trees and removal of brush and fine fuels. We request that when thinning is being considered in areas where it makes ecological sense, that it be applied to portions of the forest structure where it will make the most sense and where the public may realize some benefit.	Wildfire, thinning, type of treatments	R	Treatments are designed to meet Forest Plan direction. See Chapter 2. Effects are disclosed in Chapter 3. See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	4	We would like the Forest to also consider the benefits of dead snags for wildlife, as well as other ecological benefits related to soil holding and “nurse tree” characteristics.	Wildlife	R	See 3.1.1 Vegetative Diversity, 3.2 Wildlife, and 3.4 Fire and Fuels discussion
GYC	5	Assess the cumulative effects on forest resources in conjunction with other past present and future projects in the reasonably foreseeable future. Provide complete cumulative effects analysis with maps of past activities and current condition of treated areas.	Cumulative Impacts	R	See 3.1.1 Vegetative Diversity, 3.10 Cumulative Effects discussions.
GYC	6	Provide an analysis of T&E species and MIS, habitat connectivity, provide for wildlife movement, cover and habitat security.	Wildlife	R	See Section 3.2 Wildlife. See 3.2.4 MIS discussion
GYC/	7	In areas that could be suitable for thinning, we request that activities focus on thinning understory trees and removal of brush and fine fuels.	Wildfire, thinning, type of treatments	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion.
GYC	8	We ask that the Forest be specific about what it regards as dying, and that definition not include trees, which it may classify as “vulnerable” to disease, bugs, or fire.	Dead and dying trees	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion

Source	#	Comment (paraphrased)	Issue	Type	Disposition
GYC	9	Provide stand inventory maps, which delineate distribution of forest types by age class and stand density. These maps, in conjunction with an identification of the location of the current pockets of beetle mortality or other target insect and diseases would serve as critical data necessary to understand current and future insect populations and disease threats. We would appreciate an analysis between the effectiveness of prescribed fire vs. mechanical treatment in controlling insects.	Forest type, age class, density, Insects	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion.
GYC	10	Request that the Forest consider prescribed fire as its primary tool for addressing fuels and insects.	Wildfire, Fuels, Insects	R	See 1.4 Purpose and Need, 2.2 Alternatives, 3.1.1 Vegetative Diversity, and 3.4 Fire and Fuels discussion
GYC	11	Provide the expected effectiveness of fire breaks in addressing fuels and insects. Provide the expected effectiveness of fire breaks and mechanical treatments in slowing/stopping a stand-replacement fire by forest type	Effectiveness of Treatments	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	12	Provide information on forest seral stages. Please provide a map outlining forest age class diversity per stand per stand to be treated, as well as an evaluation of the effects of actions on each age class.	Forest seral stages	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	13	Discuss the status and condition of deciduous species.	Deciduous	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	14	Include a plan for restoring the natural role of fire to the landscape over the long-term	Natural role of fire	R	See 3.4 Fire and Fuels discussion
GYC	15	Address fisheries and water quality.	Fisheries/ Water quality	R	See 3.3 Watershed Resources discussion.
GYC	16	Please assure that no new roads or temporary roads will be constructed. All work should be completed using the existing road network.	Roads	R	The transportation system and access management is discussed in sections 1.4 Purpose and Need, 1.7 Issues, and 3.7 Transportation. Roads are also discussed in 3.2 Wildlife and 3.3 Watershed.
GYC	17	Reduce the flammability of structures and work with cabin owners-Emphasize cabin owner responsibilities. Educate landowners and citizens about fire ecology and avoid a mis-application of fire and fuels treatment that are not appropriate given what we know about fire ecology in the GYE.	Cabin owner responsibilities	OS/R	See 3.4 Fire and Fuels discussion
GYC	18	Please provide which ecologically sustainable conditions and desired vegetation conditions the forest is trying to achieve and where those definitions come from.	Desired vegetation conditions	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	19	Define treatments areas/project areas and what the purpose and goal is there.	Purpose and Goals	R	The treatment areas and acres are discussed in sections 1.4 Purpose and Need, and the section 2.2.2 Proposed Action.
GYC	20	Address the use of prescribed fire or mechanical treatments in encroached (historic) meadows.	Treating meadows	R	See 3.1.1 Vegetative Diversity discussion. See 3.4 Fire and Fuels discussion
GYC	21	Assurance of compliance with FWS Biological Opinion For the North Fork Highway Project.	Wildlife	OS	
GYC	22	The integrity of all remaining roadless areas remains out highest priority for projects on the Forest. Concern is over mechanical treatment or other related activity, including temporary road construction in roadless areas. As long as prescribed burning can be conducted without pre- or post-mechanical treatment, we do not oppose the prescribed burning in roadless areas for this project (Eagle Creek).	Roadless Areas and Roads	Alt.	RARE II is included in sections 1.7 Issues, and 3.6.1.

Source	#	Comment (paraphrased)	Issue	Type	Disposition
Mennenga	1	Make sure the “mechanical treatment” aspect of this plan is subject to the NEPA process, wherein the environmental aspects are considered.	NEPA process	R	The NEPA process is being followed, environmental effects are discussed in Chapter 3.
Mennenga	2	If “mechanical treatments” are prescribed, try to limit operations to only DEAD trees. The SNF is a public trust to be enjoyed by all, and your role is to consider aesthetic, hunting, and recreational aspects as more important than economic interests.	Treatments	GS	
Lealos	1	Expressed support for the project. My only concern is that you plan to take five years to accomplish your goals.	Implementation timeframe	GS	
Lealos	2	Would strongly urge the use of categorical exclusions on as many projects as possible.	NEPA process	GS	
Koenig	1	As a cabin owner, I have witnessed first hand the concerns of the beetle epidemic and advanced successional stage of the forest. It is my opinion that the factors in combination pose a significant risk to human health and safety as well as economic loss.	Wildfire, Fuels, Insects, Health and Safety	GS	
Koenig	2	It is on this basis that I affirm my full support for the project as outlined, so long as it is planned, managed and executed with the greatest respect for the corridors environment and ecosystem.	Implementation and project effects	GS	
Koenig	3	I feel that it is critical that the dead and dying trees be removed as expeditiously as possible. This would immediately address the concern for fire danger with the added benefit of harvesting the timber while still in a marketable condition.	Wildfire, economics	GS	
Koenig	4	While I understand that short-term this would affect the scenic beauty of the forest, the consequences of not removing it are forever and the long-term advantages to the flora and fauna of the forest are substantial.	Project effects	GS	
Johnson	1	Overall, we are very grateful for the pro-active stance the Forest Service is taking in this matter.	Wildfire	GS	
Johnson	2	We believe the dead Douglas-fir should be removed. We make a distinction between dead and what are described as “dying”. Our understanding is that such trees have been known to recover so we believe that cutting them may be premature in some cases.	Wildfire Treatments Dead and dying	GS	
Johnson	3	We believe that firewood cutters and the slash left behind is exacerbating the hazardous fuels problem.	Firewood cutters and slash	GS	
Johnson	4	We suggest that either a salvage sale or service contract be implemented to deal with the remaining dead trees on the Table Mountain Rd. side. On the Green Creek Rd. side, a cut of over 200 dead trees was just conducted. We believe that this cut in conjunction with the pheromone placement on this side of the drainage will deal with the dead trees in the vicinity of the five cabins on this side of the drainage for now.	Salvage of dead trees, service contract	R	See the Purpose and Need in section 1.4 and the Proposed Action and alternatives in section 2.2.



Source	#	Comment (paraphrased)	Issue	Type	Disposition
Shoshone-Bannock Tribes	1	Please explain how this project will affect habitat for wildlife and the possible displacement of wildlife. Please explain if this project would have any affects to cultural resources within the project area. Additionally, are there archaeological sites within the project area that will be affected by mechanical treatments.	Wildlife, cultural	R	See section 3.2 Wildlife and section 3.8 Heritage Resources
Trout Unlimited	1	Expressed support for the project provided coldwater fisheries are not adversely impacted. For example, when lumber salvaging, attention needs to be paid to utilizing best management practices to protect the watershed.	Fisheries, Watershed Protection, BMPs	GS	
Yochim	1	Expressed support for the project. I would not want any large, live, old growth, Douglas-fir removed, because of their scenic/aesthetic value.	Old growth, Aesthetics	R	See 3.1.1 Vegetative Diversity discussion.
Yochim	2	Cavity-nesting birds need standing dead trees, as do various species of woodpeckers. Removal of dead, standing trees should not be so extensive as to take all such trees. A minimum amount of snags per acre should be left.	Snags	R	See 3.1.1 Vegetative Diversity discussion and Section 3.2 Wildlife.
Ernst	1	Expressed support for the project. Get it done as fast as possible.	Timeframe	GS	
US Fish and Wildlife	1	The FWS has determined that TE species may be present (Bald eagle, Canada lynx, Grey wolf, grizzly bear)	TE species	GS	See Section 3.2 Wildlife discussion.
US Fish and Wildlife	2	Please consider impacts on migratory birds.	Wildlife	R	See Section 3.2 Wildlife discussion.
Open house	1	Consider firewood cutters-make firewood more accessible, let firewood cutters accomplish objectives. Need to make products available to commercial firewood cutters. Expressed support for project.	Firewood	GS	
Open house	2	Hazardous fuels reduction needs to occur to provide protection to forested areas, habitat, scenery, and watersheds, as well as private property, cabins, lodges and recreational developments such as campgrounds.	Wildfire	GS	

### ***Appendix C. Response to Comments***

[reserved] This Appendix includes a summary of the comments submitted for the Predecisional North Fork Vegetation Management EA.

## *Appendix D*

### **North Fork EA –Best Management Practices (BMPs)**

#### **Hydrologic Function**

**North Fork BMP-1** – Manage land treatments to conserve site moisture and to protect long-term stream health from damage by increased runoff.

#### **Project Design Criteria**

- Reclaim disturbed areas (e.g. roads, skid trails, landings) with effective ground cover, which may include slash, organic debris, or seeding as appropriate. Use only certified native seed as approved by the soil scientist/botanist.

#### **Roads**

- Temporary roads shall be obliterated immediately after the intended use and prior to the next spring runoff. The obliteration work shall restore the natural drainage patterns of the area.
- All stream crossings on temporary roads and/or skid trails will be restored to pre-project conditions to the extent practical. This shall include reshaping and revegetating (where applicable) of the stream bank.

#### **Harvest and Burn Units**

- Design the size, orientation, and surface roughness of the mechanical treatments and burn units to prevent snow scour and site desiccation.

**North Fork BMP-2** – Manage land treatments to maintain enough organic ground cover in each land unit to prevent harmful increased runoff.

#### **Project Design Criteria**

- Maintain the organic ground cover of each mechanical and prescribed burn unit so that to prevent snow scour and site desiccation.

#### **Roads**

- Temporary road obliteration shall include the placement of organic material where available (fine and course woody debris). Revegetate all areas capable of supporting vegetation.

#### **Harvest Units**

- Use the slash and/or chipped material to restore the organic ground cover in disturbed areas (e.g. landings and skid trails).

#### **Burn Units**

- A combination of aerial (helicopter) and ground (handheld torches) ignition systems will be utilized in order to control the fire intensity and fire severity.
- Manage fire intensity and burn severity. Burn intensity relates to amount and rate of surface fuel consumption. A more important factor to consider for soil and watershed resources is burn severity, which relates to the degree of physical, chemical, and biological changes to the soil. Conduct activities such that burn severities are kept at low to low/moderate levels. Table A1 discusses burn severity.

Table A1. Burn severity descriptions\*

Low Severity	Moderate Severity	High Severity
Mineral soil is not changed. Low soil heating. Lethal temperatures for soil organisms may occur in the top 1cm of soil, but soil temperatures at 1 cm are less than 50°C. Forested areas - Litter and duff layers may be scorched, but they are not altered over the entire depth. Grasslands and shrublands – Mostly black surface; gray ash may be present for a short time.	Moderate soil heating, ground char. Soil temperatures at 1 cm can be 100-200°C. Lethal temperatures for soil organisms can occur down to 3-5cm. Forested areas - Litter is consumed and duff is deeply charred or consumed, but the underlying mineral soil surface is not visibly altered. Light colored ash. Woody debris is mostly consumed, except for logs, which are deeply charred. Grasslands and shrublands – Gray to white ash. Visible charring on the upper 1 cm of soil, but soil is not altered.	High soil heating occurs. Soil temperatures at 1 cm exceed 250°C. Lethal temperatures for soil organisms can occur down to 9-16cm. Forested areas - Duff is completely consumed and the top of the mineral soil is reddish or orange. Below 1 cm, the soil is darker and the charred layer can extend down to 10cm. Logs can be consumed. Soil textures are changed and localized fusion occurs (clinkers). All shrub stems are consumed; only large stubs remain.

\*Source: Draft BAER Guidelines Paper

#### **Riparian Areas**

**North Fork BMP-3** - In the water influence zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition.

#### Project Design Criteria

- Give preferential consideration to riparian-dependent resources when conflicts among land use activities occur (Forest Plan).
- Do not add or remove rocks, wood, or other material in streams or lakes without consulting the hydrologist or fish biologist.
- The WIZ for this project includes the geomorphic floodplain and the riparian ecosystem and the inner gorge at times. Its minimum horizontal width from the top of each bank is 100 feet. However, the WIZ is larger in areas so as to include the entire riparian area. Activities are not excluded within the WIZ, however measures are followed to protect riparian and aquatic values. Evaluations during implementation shall refine the WIZ boundaries to provide for adequate protection. The WIZ is shown on the attached project map. A shape file of the WIZ is located in the project folder:  
J:\fsfiles\office\nepa\_work\fire\north\_fork\_fuel\_breaks\shapefiles\WIZ\_no\_fk\_ea.shp
- An interdisciplinary team consisting of a silviculturist, burn specialist, wildlife biologist, botanist, fisheries biologist and hydrologist will provide input for selecting tree removal, specific burn sites and recommended fire intensity levels in and around riparian and wetland areas. Follow-up monitoring will be conducted to determine the effectiveness of the proposed actions and implemented rehabilitation measures (Zubik).

#### Roads and Harvest Units

- Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 2 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods. Do not allow heavy equipment operation in stream channels during the following dates: March 15 – June 30 in the North Fork Shoshone River and April 1 – July 31 on tributaries to the North Fork.
- The Forest Service Representative (FS Rep.) shall ensure at least one-end log suspension in the WIZ.
- Fell trees in a way that protects vegetation in the WIZ from damage. Avoid felling trees that are located on the stream bank, especially when located on an inflection point of the bank (where the bank drops off into the floodplain or into the active channel). Trees felled into riparian areas and upland areas immediately adjacent to riparian areas shall be removed by end lining; remove the resulting slash where necessary to protect cover, soil, and water (Forest Plan).
- Keep log landings and skid trails out of the WIZ and other swales located outside of the WIZ (e.g. ephemeral draws). Locate concentrated-use sites outside the WIZ. . The Sale Administrator shall consult the hydrologist or fisheries biologist if no other options exist prior to approval.
- Restrict heavy equipment use in the WIZ to periods when soils are dry or when the ground is protected by 2 inches of frozen soil or 12 inches of packed snow
- Maintain at least 80% of the potential ground cover within 100 feet of all perennial streams, lakes, and waterbodies, or the outer margin of the riparian area, which ever is greater (Forest Plan).
- Reduce debris jam potential by cutting stumps to near ground level in the 100-yr floodplain (Forest Plan).
- The sale administrator shall enlarge the WIZ as needed during operations if additional perennial or intermittent streams and wetlands are found.
- Do not excavate earth material from, or store material in, any stream, swale, lake, wetland, or WIZ (except to construct designated crossings, which shall be approved by hydrologist and fisheries biologist).
- The sale administrator shall not allow the slash generated from the harvest and road activities to accumulate in stream channels, or the excessive accumulation of slash within the WIZ.

#### Burn Units

- Locate concentrated-use sites outside the WIZ. Consult the hydrologist, fisheries biologist, or soils scientist if no other option exists.
- If any cutting or trimming of vegetation is required within the WIZ, than the Burn Boss shall not allow organic debris generated from project activities to accumulate in stream channels, or within the WIZ. Any project-generated debris shall be removed where necessary to protect cover, soil, and water.
- Avoid felling trees that are located on stream banks, especially when located on an inflection point of the bank (where the bank drops off into the floodplain or into the active channel). Fell trees in a way that protects vegetation in the WIZ from damage. Where felling is necessary, reduce debris jam potential by cutting stumps to near ground level in the 100-yr floodplain.
- Limit burn severity to low or low/moderate within the WIZ. Maintain at least 80% of the potential ground cover within 100 feet of all perennial streams, lakes, and waterbodies, or the outer margin of the riparian area, which ever is greater. Because the burning is to occur in the spring and the burn severity is limited to low or low/moderate within the WIZ, the expected regrowth and litter fall can be used in calculating this standard.

**North Fork BMP-4** – Design and construct all stream crossings and other instream structures to provide for passage of flow and sediment, withstand expected flood flows, and allow free movement of resident aquatic life.

#### Project Design Criteria

- Crossings are installed to meet Corps of Engineers and State permits, pass normal flows and debris, and be hardened to withstand floods as shown in table A2. Since the crossings are temporary in nature, it is more important to construct the crossings to adequately pass the expected flows and the ice build up for the period of use. The sale administrator shall closely

monitor weather conditions, weather reports, and streamflow. The temporary crossings shall be pulled if the river is expected to increase during operations (e.g. prediction of a significant rain on snow event).

Table A2

Design Life (years):	1	2	5	10	20	50
Design Flood (years):	10	10	25	50	100	200

- Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 2 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods. Do not allow heavy equipment operation in stream channels during the following dates: March 15 – June 30 in the North Fork Shoshone River and April 1 – July 31 on tributaries to the North Fork. The temporary stream crossings shall be installed during low flow periods and removed prior to March 15. Temporary stream crossings will be obliterated and rehabilitated prior to spring runoff. **The hydrologist, engineer, and fish biologist shall approve the crossing designs prior to construction** and shall be on site during construction and during rehabilitation.
- An engineer, aquatic biologist, and hydrologist will provide input and concur with the number of stream crossings in operation at any one time, the types of crossings, and locations. They will also provide input and concur with the road locations, designs, timing of use and rehabilitation in and adjacent to riparian areas (Zubik).
- Only locate roads in riparian areas if no alternative locations exist. Locate all stream crossings on a straight and resilient stream reach and cross perpendicular to flow. Locate crossings at points with low bank slope and firm surfaces. Do not parallel streams; cross riparian areas and streams as directly as possible.
- Provide for passage of fish and other aquatic life.
- Minimize the impact on hydraulic characteristics; install stream crossings to sustain bankfull dimensions of width, depth, and slope and keep streambeds and banks resilient. The temporary crossings shall be restored to pre-project conditions after use and prior to spring runoff.

**North Fork BMP-5** - Conduct actions so that stream pattern, geometry, and habitats are maintained or improved toward robust stream health.

Project Design Criteria

- Do not add or remove rocks, wood, or other material in streams or lakes without consulting the hydrologist or fish biologist.
- Do not relocate natural stream channels.
- Restore natural drainage patterns by obliterating temporary roads and rehabilitating other disturbed sites, such as landings & skid trails.

**North Fork BMP-6** – Maintain long-term ground cover, soil structure, water budgets, and flow patterns of wetlands to sustain their ecological function, per 404 regulations.

Project Design Criteria

- Keep ground vehicles out of wetlands unless protected by at least 1 foot of packed snow or 2 inches of frozen soil. Do not disrupt water supply or drainage patterns into wetlands.
- Keep roads and skid trails out of wetlands. If they must enter wetlands, use bridges or raised prisms with diffuse drainage to sustain flow patterns. Set crossing bottoms at natural levels of channel beds and wet meadow surfaces. Avoid actions that may dewater or reduce water budgets in wetlands.
- Avoid long-term reduction in organic ground cover and organic soil layers in any wetland (including peat in fens). Avoid any loss of rare wetlands such as fens and springs.

**Burn Units**

- Do not build firelines in or around wetlands unless needed to protect life, property, or wetlands. Use hand lines with minimum feasible soil disturbance. Use wetland features as firelines if feasible.
- Keep ground vehicles out of wetlands. Do not disrupt water supply or drainage patterns into wetlands.
- Avoid long-term reduction in organic ground cover and organic soil layers in any wetland (including peat in fens). Avoid any loss of rare wetlands such as fens and springs.

**Sediment Control**

**North Fork BMP-7** – Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate.

Project Design Criteria

- Prohibit public use on all temporary roads.
- A hydrologist or soil scientist shall walk the temporary road locations prior to approval and construction.
- Temporary roads shall be obliterated after use and prior to spring runoff.

- Roads will not be authorized on slopes steeper than 60% or in areas with high geologic hazards.
- The sale administrator shall cease soil-disturbing actions during periods of heavy rain or wet soils.
- Install cross drains as needed on temporary roads in order to effectively disperse runoff into filter strips and minimize connected disturbed areas. The approaches to stream channel crossings shall be armored.
- Construct temporary roads with rolling grades and dips instead of ditches and culverts.
- Retain stabilizing vegetation on unstable soils. The road route shall avoid unstable or highly erodible soils.
- No heavy equipment use shall occur on slopes steeper than 40%.
- Use existing roads unless other options will produce less long-term sediment.
- The FS Rep. shall not allow ground skidding with blades lowered or on highly erodible slopes steeper than 40%. Conduct logging to disperse runoff as feasible.
- Maintain roads for proper drainage.

#### **Burn Units**

- Avoid burning in areas shown as having a severe or very severe erosion hazard rating on the attached map. Limit burn severity to low where burning in such areas cannot be avoided.
- Limit disturbed sites (e.g. heli-spots) to the minimum feasible for safe operations.
- Reclaim disturbed sites (heli-spots) if needed following the project.
- It is not expected that fire lines will be needed for project implementation. However, if lines are determined to be needed during implementation, then:
  - Build firelines with rolling grades and minimum downhill convergence. Outslope or backblade and permanently drain lines.
  - Use filter strips, and sediment traps where needed, to keep sand-sized sediment on the land and disconnect disturbed soil from streams, lakes, and wetlands. Disperse runoff into filter strips.
  - Build lines outside filter strips (WIZ) unless tied into a stream, lake, or wetland as a firebreak with minimal disturbed soil.
  - Apply Packer's Guide in design of cross drain spacing and buffers. Empty cross drains onto stable slopes that disperse runoff into filter strips. Avoid soils that may gully or tighten cross-drain spacing so that gullies are not created.
  - Do not encroach fills or introduce soil into streams, swales, lakes, or wetlands.
  - Consult the hydrologist or soil scientist to evaluate the need to reclaim firelines.

**North Fork BMP-8** - Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands.

#### **Project Design Criteria**

- Design all roads, skid trails, and firelines to the minimum standard for their use and to "roll" with the terrain as feasible.
- Use filter strips, and sediment traps where needed, to keep sand-sized sediment on the land and disconnect disturbed soil from streams, lakes, and wetlands. Disperse runoff into filter strips.
- Key sediment traps into the ground. Clean them out when 80% full. Remove sediment to a stable, gentle, upland site and revegetate.
- Keep heavy equipment out of filter strips (WIZ) except to do restoration work or build hardened stream or lake approaches. Yard logs up out of each filter strip with minimum disturbance of ground cover.
- Install an adequate amount of road drainage structures to prevent erosion and failure.

**North Fork BMP-9** – Stabilize and maintain roads and other disturbed sites during and after construction to control erosion.

#### **Project Design Criteria**

- Do not encroach fills or introduce soil into streams, swales, lakes, or wetlands.
- Properly compact fills and keep woody debris out of them.
- Obliterate temporary roads after use. Use techniques such as recontouring and ripping. Heavily litter the surface with available organic matter and revegetate obliterated routes to restore ground cover. Use certified local native plants as feasible; avoid persistent or invasive exotic plants. Provide sediment control until erosion control is permanent.
- On existing routes, do not disturb ditches during road maintenance unless needed to restore drainage capacity or repair damage. Do not undercut the cut slope.
- Space cross drains, from no more than 120 feet in highly erodible soils on steep grades, to no more than 1,000 feet in resistant soils on flat grades (Table A3). Do not divert water from one stream to another. Or apply Packer's Guide in design of cross drain spacing and buffers.
- Empty cross drains onto stable slopes that disperse runoff into filter strips. Avoid soils that may gully or tighten cross-drain spacing and armor outlets so that gullies are not created.
- Harden rolling dips as needed to prevent rutting damage to the function of the rolling dips. Ensure that road maintenance provides stable surfaces and drainage.

- Where berms must be used, construct and maintain them to protect the road surface, drainage features, and slope integrity while also providing user safety.
- Minimum standards for road obliteration:
  1. Remove culverts and/or bridges and restore natural drainage patterns.
  2. Sideslopes 0 to 40% and first ¼ mile: recontour as much as possible. Sideslopes over 40%: fill and round ditches, round and outslope shoulders and fill slope. Outslope entire roadbed 15-20%.
  3. Use Packer's Guide or Table A1 for cross drain or waterbar spacing.
  4. Revegetate entire template and disturbed area.
  5. Restore road entrance to a natural non-road appearance.

Table A3. Maximum cross-drain spacing in feet<sup>1</sup>; based on soil types (Unified Soil Classification, ASTM D 2487)

Road Grade (%)	ML, SM Extremely Erodible Silt-sands with little or no binder (d.g.)	MH, SC, CL Highly Erodible Silts-sands with moderate binder	SW, SP, GM, GC Mod. Erodible Gravels + fines & sands with little or no fines	GW, GP Low Erodible Gravels with little or no fines
1-3	600	1000	1000	1000
4-6	300	540	680	1000
7-9	200	360	450	670
10-12	150	270	340	510
13-15	120	220	270	410

<sup>1</sup> - These are maximum spacings. They should be reduced if warranted by onsite factors such as expected road use, downslope stability and erosion hazards, and filter strip capability to trap runoff and sediment and conserve ground cover integrity given the extra water. Combine these spacings with common sense to place cross drains where damage to ditches, slopes, and streams will be minimized. For example, shorten or extend the spacing where needed to move a cross-drain outlet from a stream headwall to a convex slope.

**North Fork BMP-10** – Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage.

#### Project Design Criteria

- The temporary roads shall be obliterated prior to spring runoff. Apply obliteration techniques that restore the natural drainage patterns and disperse runoff into filter strips (e.g. ripping, recontouring, and scattering of slash).
- Restore all temporary stream crossings (including all fill material in the active channel and floodplain), restore the channel geometry, and revegetate the channel banks as needed feasible.
- Reclaim firelines and restore natural drainage patterns.

#### Soil Productivity

**North Fork BMP-11** – Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15% of any land unit.

#### Project Design Criteria

- The FS Rep. shall restrict roads, landings, skid trails, concentrated-use sites, and similar soil disturbances to designated sites. Limit these areas to the amount necessary to meet project objectives.
- Limit intensive ground disturbing activities on unstable slopes and highly erodible sites.
- Rip on the contour, recontour, or obliterate compacted soils (i.e. when there is a 15% increase in the bulk density or 50% decrease in macro pore space).
- Reduce the project caused on-site erosion rates by 75% in the first year following treatment and by 95% within five years.
- Operate heavy equipment for land treatments only when soil moisture is below the plastic limit, or protected by at least 1 foot of packed snow or 2 inches of frozen soil.
- Conduct prescribed fires when soil, humus, and large fuels are moist.

**North Fork BMP-12** - Maintain or improve long-term levels of organic matter and nutrients on all lands.

#### Project Design Criteria

- On soils with topsoil thinner than 1 inch, topsoil organic matter less than 2%, or effective rooting depth less than 15 inches, retain 90% or more of the fine (less than 3 inches in diameter) logging slash in the stand after each clearcut and seed-tree harvest, and retain 50% or more of such slash in the stand after each shelterwood and group-selection harvest, considering existing and projected levels of fine slash.
- If machine piling of slash is done, conduct piling to leave topsoil in place and to avoid displacing soil into piles or windrows.
- Reduce the project caused on-site erosion rates by 75% in the first year following treatment and by 95% within five years.



- Ensure that 80% of the original ground cover is recovered within 5 years of treatment
- Conduct prescribed fires when soil, humus, and large fuels are moist.

#### **Water Purity**

**North Fork BMP-13** - Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water.

#### **Project Design Criteria**

- Locate vehicle service and fuel areas and storage areas on gentle upland sites. Avoid locating these sites in valley bottoms where possible.
- Follow the Forest Oil and Hazardous Substance Spill Contingency Plan.
- The burn Boss shall regularly inspect equipment and petroleum products storage containers for significant leaks. The Burn Boss shall report spills. Steps shall then be taken to install emergency traps to contain them and clean them up.

**North Fork BMP-14** – Apply runoff controls to disconnect new pollutant sources from surface and ground water.

#### **Project Design Criteria**

- The FS Rep. shall regularly inspect equipment and petroleum products storage containers for significant leaks. The FS Rep. shall report spills. Steps shall then be taken to install emergency traps to contain them and clean them up.

**North Fork BMP-15** – Manage water-use facilities to prevent gully erosion of slopes and to prevent sediment and bank damage to streams

#### **Project Design Criteria**

- Avoid any diversion ditches within summer home and lodge areas.

### State of Wyoming Best Management Practices for Silviculture

Note: WYDEQ Silviculture BMPs should be referenced for a full understanding of these BMPs<sup>23</sup>

BMP	Objective	North Fork BMP Number and/or Other Implementation Measures That Meet State BMP Objective
<b>Planning BMPs</b>		
1 - Soil and Water Resource Monitoring and Evaluation	To determine the effects of land management activities on soil productivity and beneficial water uses; to monitor baseline watershed conditions for comparison with State standards; to ensure the health and safety of water users; and to evaluate the effectiveness of applied BMP's.	The Forest annually reports its soil and water resource monitoring and evaluation in the Forest's Monitoring and Evaluation Report <sup>24</sup> .
2 - Wetlands Analysis and Evaluation	To maintain wetland functions and avoid adverse soil and water resource impacts associated with the destruction or modification of wetlands.	North Fork BMPs 3, 4, 6, 8, and 9
3 - Riparian area designation	To minimize the effects of road building and harvesting activities on Riparian Areas.	North Fork BMP-3
4 - Oil and Hazardous Substance Spill Contingency	To minimize potential contamination of waters from accidental spills by prior planning and development of Spill Prevention Plans.	A Spill Prevention Control and Countermeasure plan is required when more than 1,320 gallons of petroleum products are stored. An unofficial plan shall be developed even if the volume is less than the 1,320 gallons. Report all spills in excess of 25 gallons of gasoline or 10 barrels of crude oil to the DEQ. Virtually all spills of hazardous substances should be reported. North Fork BMP-14.
5 - Sanitary Guidelines for the Construction of Camps	To protect surface and subsurface soil and water resources from nutrients, bacteria and chemicals associated with solid waste and sewage disposal.	A FS Rep. shall approve any temporary camps. Camps shall not be located in the WIZ. Wastewater facilities, sewage disposal, and handling of garbage and other solid shall comply with Forest Service Regulations.
6 - Timber Sale Design	To insure that timber harvest unit design will maintain or improve hydrographic characteristics by increasing runoff quantity and/or extending the runoff period, maintain water quality and soil productivity, and reduce soil erosion and sedimentation.	The proposed mechanical units are classified as suitable for timber harvesting. These units have been evaluated to estimate the response on the affected watersheds.
7 - Skidding Design	To minimize erosion and sedimentation and protect soil productivity by designing skidding patterns that best fit the terrain.	North Fork BMPs 3, 5, 7, 8, and 11
8 - Suspended Log Yarding	N/A	N/A – all units are tractor accessible (<40%).
9 - Water Source Development Consistent with Water Quality Protection	To supply water for road construction and maintenance and fire protection while maintaining water quality.	The FS Rep. will approve any water sources. Do not reduce downstream flow so as to detrimentally affect aquatic resources, fish passage, or other uses. Overflow should go directly back into the stream. North Fork BMPs 3, 4, and 5
<b>Harvesting, Thinning, Slash Treatment, and Revegetation</b>		
10 - Equipment Limitations in Wetlands, Bogs, and Wet Meadows	To limit soil damage, turbidity, and sediment production resulting from compaction, rutting, runoff concentration and subsequent erosion.	North Fork BMPs 3, 6, 8 and 9
11 - Log Landing Location and Design	To locate landings in such a way as to avoid soil erosion and water quality degradation.	North Fork BMPs 3, 5, 7, 8, 9, and 10
12 - Log Landing Erosion Protection and Control	To reduce the impacts of erosion and subsequent sedimentation from log landings through the use of mitigating measures.	North Fork BMPs 3, 5, 7, 8, 9, and 10

<sup>23</sup> Silviculture BMPs may be viewed in pdf format at <http://deq.state.wy.us/wqd/watershed/Downloads/NPS%20Program/Silviculture%202004.pdf>

<sup>24</sup> The annual Monitoring and Evaluation Report may be viewed at <http://www.fs.fed.us/r2/shoshone/forestmgmt/nepa/planinfo.htm>

<b>BMP</b>	<b>Objective</b>	<b>North Fork BMP Number and/or Other Implementation Measures That Meet State BMP Objective</b>
13 - Revegetation of Areas Disturbed by Harvest Activities	To establish a vegetative cover on disturbed sites to prevent erosion and sedimentation.	North Fork BMPs 2, 7, 11, 9, and 10
14 - Erosion Control on Skid Trails	To protect water quality by minimizing erosion and sedimentation derived from skid trails.	North Fork BMPs 5, 8, 9, and 10
15 - Stream Channel Protection	To protect the natural flow of streams; to provide unobstructed passage of stormflows; to provide unobstructed fish passage; to maintain shading and ambient stream temperatures; to reduce sediment and other pollutants from entering streams; and to restore the natural course of any stream as soon as practicable if the stream is diverted as a result of timber management activities.	North Fork BMPs 1, 3, 4, 5, 7, 8, 9, and 10
16 - Erosion Control and Structure Maintenance	To insure that erosion-control structures are stabilized and working effectively.	North Fork BMPs 7 and 9. The FS Rep. shall approve an erosion control plan and monitor for implementation of the plan.
17 - Slash and Cull Wood Treatment in Sensitive Areas	To protect water quality by protecting sensitive areas from degradation which would result from using mechanized equipment for slash or cull wood disposal.	North Fork BMP 3
<b>ROADS</b>		
18 - General Guidelines for the Location and Design of Roads and Trails	To locate and design roads and trails with minimal soil and water resource impact while considering all design criteria.	North Fork BMPs 1, 3, 4, 6, 7, 8, 9, 10, and 11
19 - Road and Trail Erosion Control Plan	To prevent, limit and mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities through effective administration and timely implementation of erosion control practices.	The FS Rep. shall approve an erosion control plan and monitor for implementation of the plan during construction of skid trails and temporary roads. North Fork BMPs 6, 7, 8, 9, 10, and 11
20 - Timing of Construction Activities	To minimize erosion by restricting operations during excessive moisture periods and to avoid impacts to fish migration and spawning.	North Fork BMPs 3, 4, 7, 8, 9, and 11
21 - Slope Stabilization and Prevention of Mass Failures	To reduce sedimentation by reducing the chances for road related mass failures, including landslides and embankment slumps.	North Fork BMPs 1, 2, 7, 8, 9, and 10
22 - Stabilization of Slopes	To minimize soil erosion from road cut slopes, fill slopes, and travelway.	North Fork BMPs 1, 2, 3, 4, 7, 8, 9, and 10
23 - Permanent Road Drainage	To minimize the erosive effects of concentrated water and the degradation of water quality by proper design and construction of road drainage systems and drainage control structures.	North Fork BMPs 1, 3, 4, 7, 8, 9, and 10
24 - Pioneer Road Construction	To minimize sediment production and mass wasting associated with pioneer road construction.	North Fork BMPs 7, 8, and 9
25 - Timely Erosion Control Measures on Incomplete Roads	To minimize erosion and sedimentation from disturbed ground on incomplete projects.	Erosion control should be kept current with ground disturbance to the extent that the area can be rapidly "closed" if weather conditions deteriorate. The area should not be abandoned with remedial measures incomplete. North Fork BMPs 7, 8, and 9
26 - Control of Road Construction Excavation and Sidecast Material	To reduce sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance.	North Fork BMPs 3, 7, 8, and 9
27 - Controlling In-Channel Excavation	To minimize stream channel disturbance and related sediment production, and to maintain natural stream course integrity and flow conditions.	North Fork BMPs 3, 4, 5, 6, 8, 9, and 10
29 - Stream Crossings on Temporary Roads	To keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish passage.	North Fork BMP 4

<b>BMP</b>	<b>Objective</b>	<b>North Fork BMP Number and/or Other Implementation Measures That Meet State BMP Objective</b>
30 – Bridge/Culvert Installation	To minimize sedimentation and turbidity resulting from excavation for in-channel structures.	North Fork BMPs 3 and 4
31 - Regulation of Borrow Pits, Gravel Sources and Quarries	To minimize sediment production from borrow pits, gravel sources, and quarries, and limit channel disturbance in those gravel sources suitable for development in floodplains.	North Fork BMPs 3, 7, 8, 9, and 10
32 - Disposal of Right-of-Way and Roadside Debris	To insure that debris generated during road construction is kept out of streams and to prevent slash and debris from subsequently obstructing channels.	North Fork BMP 3
33 - Streambank Protection	To minimize sediment production from streambanks and structural abutments in natural waterways.	North Fork BMPs 3, 4, and 5
34 - Treatment of Temporary Roads	To reduce sediment generated from temporary roads by obliterating them at the completion of their intended use.	North Fork BMPs 1 and 10
<b>Pesticides, herbicides, fertilizers, and Chemicals</b>		
<b>35 - 38:</b> No pesticides, herbicides, or fertilizers will be applied as a direct result of this project.		
39 - Servicing and Refueling of Equipment	To prevent contamination of waters from accidental spills of fuels, lubricants, and other harmful materials.	The FS Rep. shall designate areas for equipment servicing and refueling. These may not be located within 150 feet of any wetlands, riparian areas, or stream channels. Follow the Forest Oil & Hazardous Substance Spill Contingency Plan.
<b>Fire Management</b>		
40 - Protection of Soil and Water from Prescribed Burning Effects	To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface water.	North Fork BMPs 1, 2, 3, 6, 7, 8, 9, 10 Design criteria in the North Fork BMPs for “disturbed sites” shall be applied to firelines.

**Mandatory BMPs** for silviculture roads needed in order to claim **404 permit exemption (33 CFR 323.4<sup>25</sup>)**

<b>Mandatory BMP</b>	<b>North Fork BMP that meets Mandatory BMP</b>
1. Permanent roads, temporary access roads, and skid trails shall be held to the minimum feasible number, width, and total length consistent with the purpose of specific silvicultural operations, and local topographic and climatic conditions;	7
2. All roads, temporary or permanent, shall be located sufficiently far from streams or other water bodies (except for portions which must cross water bodies) to minimize discharges into waters;	3, 6, 7, 8, & 9
3. The road fill shall be bridged, culverted, or otherwise designed to prevent the restriction of expected flood flows;	4
4. The fill shall be properly stabilized and maintained during and following construction to prevent erosion;	7, 8, & 9
5. Discharges of dredged or fill material into waters of the U.S. to construct a road fill shall be made in a manner that minimizes the encroachment of trucks, tractors, bulldozers, or other heavy equipment within waters of the U.S. (including adjacent wetlands) that lie outside the lateral boundaries of the fill itself;	3, 6, & 8
6. In designing, constructing, and maintaining roads, vegetative disturbance in the waters of the U.S. shall be kept to a minimum;	7
7. The design, construction and maintenance of the road crossing shall not disrupt the migration or other movement of those species of aquatic life inhabiting the water body;	4
8. Borrow material shall be taken from upland sources whenever feasible;	3
9. The discharge shall not take, or jeopardize the continued existence of, a threatened or endangered species as defined under the Endangered Species Act, or adversely modify or destroy the critical habitat of such species;	8 & 9 Not expected
10. Discharges into breeding and nesting areas for migratory waterfowl, spawning areas, and wetlands shall be avoided if practical alternatives exist;	8 & 9 Not expected
11. The discharge shall not be located in the proximity of a public water supply intake;	15 - No public intakes located near temporary roads.
12. The discharge shall not occur in areas of concentrated shellfish production;	N/A
13. The discharge shall not occur in a component of the National Wild and Scenic River System;	No designated components within the project area.
14. The discharge of material shall consist of suitable material free from toxic pollutants in toxic amounts; and	No discharges of toxic pollutants are expected.
15. All temporary fills shall be removed in their entirety and the area restored to its original elevation.	9

<sup>25</sup> 33 CFR 323.4 BMPs may be viewed at <http://www.nwo.usace.army.mil/html/od-rwy/33CFR323.htm#323.4>